Medicinal and Aromatic Plants (CIMAP), Lucknow; National Bureau of Plant Genetic Resources (NBPGR), New Delhi; and Tropical Botanic Garden and Research Institute (TBGRI), Thiruvananthapuram for the collection, conservation and characterization of our precious wealth of medicinal and aromatic plants species, which are rare/ thretened/endangered or are being used in traditional systems, or those which are commercially exploited. These gene banks have established field banks, seed and pollen repositories, in vitro and cryobanks of a number of species. Micropropagation of certain MAP species, biotransformation of intermediates for more efficient bio-activity as well as genetic manipulation of selected species have been carried out. Scientists at the National Institute of Immunology, New Delhi have isolated active fractions showing immunomodulatory activity from pippali and guduchi. At CIMAP, 250 mutants of periwinkle have been isolatd of which one mutant "Nirmal" has shown high alkaloid content. A hairy root bank of several _MAP species is also being maintained.

(c) and (d) Through the national gene banks, over 50,000 saplings of common medicinal plants have been supplied to traditional vaidyas, R&D institutions, NGOs and other bodies. Also training programmes to scientists, technicians and beneficiaries on the cultivation and processing of seven aromatic crops (palmarosa, lemongrass, vetiver, mint, geranium, jasmine and tuberose) have been successful. Selected beneficiaries have also been trained in collection, cultivation and distillation of essential oils at village level. Gradually the research leads are finding place in commercial and societal activities.

Rcscrach and development in CSIR

5S5. DR. MOHAN BABU: Will- the Minister of SCIENCE AND TECHNOLOGY be pleased to state:

(a) whether attention has been drawn to the newsitem appearing in the Hindustan Tim.es dated 14th June, 1997 captioned "CSIR demands fund to strengthen R&D"; and

(b) if so, the steps taken to make CSIR, a self financing R&D organisation?

THE MINISTER OF STATE OF THE MINISTRY OF SCIENCE AND TECHNOLOGY AND THE MINISTER OF STATE OF THE MINISTRY OF POWER (SHRI YOGINDER K. ALAGH): (a) Yes, Sir.

(b) CSIR has in its own plans, embarked on the path of becoming of self-financing, R&D organisation. Presently, CSIR generates extra budgetary resources of the order of 50% of the Government grant by undertaking contract R&D, consultancy and rendering of S&T services. The goal CSIR has set for the Ninth Five Year Plan is to increase its extra budgetary resources to a level of 100% fo the Government grant by undertaking more value added R&D and S&T activities.

Disease free oranges

586. DR. SHRIKANT RAMCHANDRA JICHKAR: Will the Minister of SCIENCE AND TECHNOLOGY be pleased to state:

(a) whether the Department of Biotechnology is monitoring the programme known as "Micropropagation of disease free mandarine orange by shoot tim grafting technique";

(b) if so, what are the findings of the department;

(c) what are the other micropropagation programme for citrus varieties; and

(d) what more steps are being taken in this area?

THE MINISTER OF STATE OF THE MINISTRY OF SCIENCE AND TECHNOLOGY AND THE MINISTER

OF STATE ON THE MINISTRY OF POWER (SHRI YOGINDER K. ALAGH): (a) and (b) A research project on "Micropropagation of disease free mandarine orange budng by shoot tip grafting technique" was sanctioned by the Department of Biotechnology in March, 1992 at Bidhan Chandra Krishi Viswavidyalya, Kalyani and was completed in March, 1996. The main objective was Micropropagation and mass produciton of disease free budded seedings of mandarine and field testing of the micropropagated plansts after screening of disease free plansts. The project has been monitored regularly through presentation before the expert committee and task force and progress reports.

A protocol has been developed for producing disease free plants of Darjeeling Orange by shoot tip grafting on different root stocks (sour-orange, rough lime, Rangpur lime). This is a unique technology and provides scope to produce disease free mother groove to supply disease free bud stocks to the citrus growers. A mocropropagated plant takes two years to fruit, while a budded grafted plant takes four years. 30 double grafted plansts were successfully produced which are now in the fruiting stage. Adequate supply of root stock is another limiting factor for citrus cultivation. A protocol has been developed for producing tissue culture raised plants of *Citrus* sp. and successful hardening for field plantation.

(c) and (d) Studies on micropropagation and micro-grafting of Khasi Mandarine orange have also been supported at ICAR Research Complex, Barapani, Shillong. Studies on Nagpur Mandarine are also being conducted at National Research Centre for Citrus, Nagpur under ICAR support, protocol standardisation is in progress for double grafting and hardening in greenhouse. The Department has now supported demonstration trails for field testing of the Darjeeling Orange plants.

Reaction to Technological Breakthrough by NASA

587. PROF. RAM KAPSE: Will the Minister of SCIENCE AND TECHNOLOGY be please to state:

(a) whether Government are aware that NASA (USA) has developed a Technology in aeronautics and built and aeroplane PATH FINDER using Solar Energy for its flight;

(b) if so, the reaction of Government thereto; and

(c) if not, whether Government will call for the requisite information from NASA?

THE MINISTER OF STATE IN THE MINISTRY OF SCIENCE AND TECHNOLOGY AND MEMBER OF STATE OF THE MINISTRY OF POWER (SHRI YOGINDER K. ALAGH): (a) Yes, Sir.

(b) Indian scientists are closely keeping track of the results of the scientific investigations being carried out by the Mars Mission on the technology elements and physical/chemical properties of the Martain surface/atmosphere.

(c) The results of the investigations being carried out through this Mission are regularly announced and published by NASA.

इस्पात विकास निधि से ऋण

588. **श्री अनन्तराय देवशंकर दवे** : क्या **इस्पात** मंत्री यह बताने की कृपा करेंगे कि **:**

(क) क्या गत कुछ वर्षो के दौरान इस्पात का उत्पादन करने वाले प्रमुख औधोगिक घरानों को इस्पात निधि से ऋण उपलब्ध कराए गए थे;

(ख) यदि हां तो अक्टूबर 1996 के अन्त तक बकाया ऋणों का ब्यौरा क्या है;

(ग) क्या सरकार ने ऋण की अदायगी हेतु कोई समय-सीमा निर्धारित की है;

(घ) यदि हां, तो तत्संबंधी ब्यौरा क्या है; और